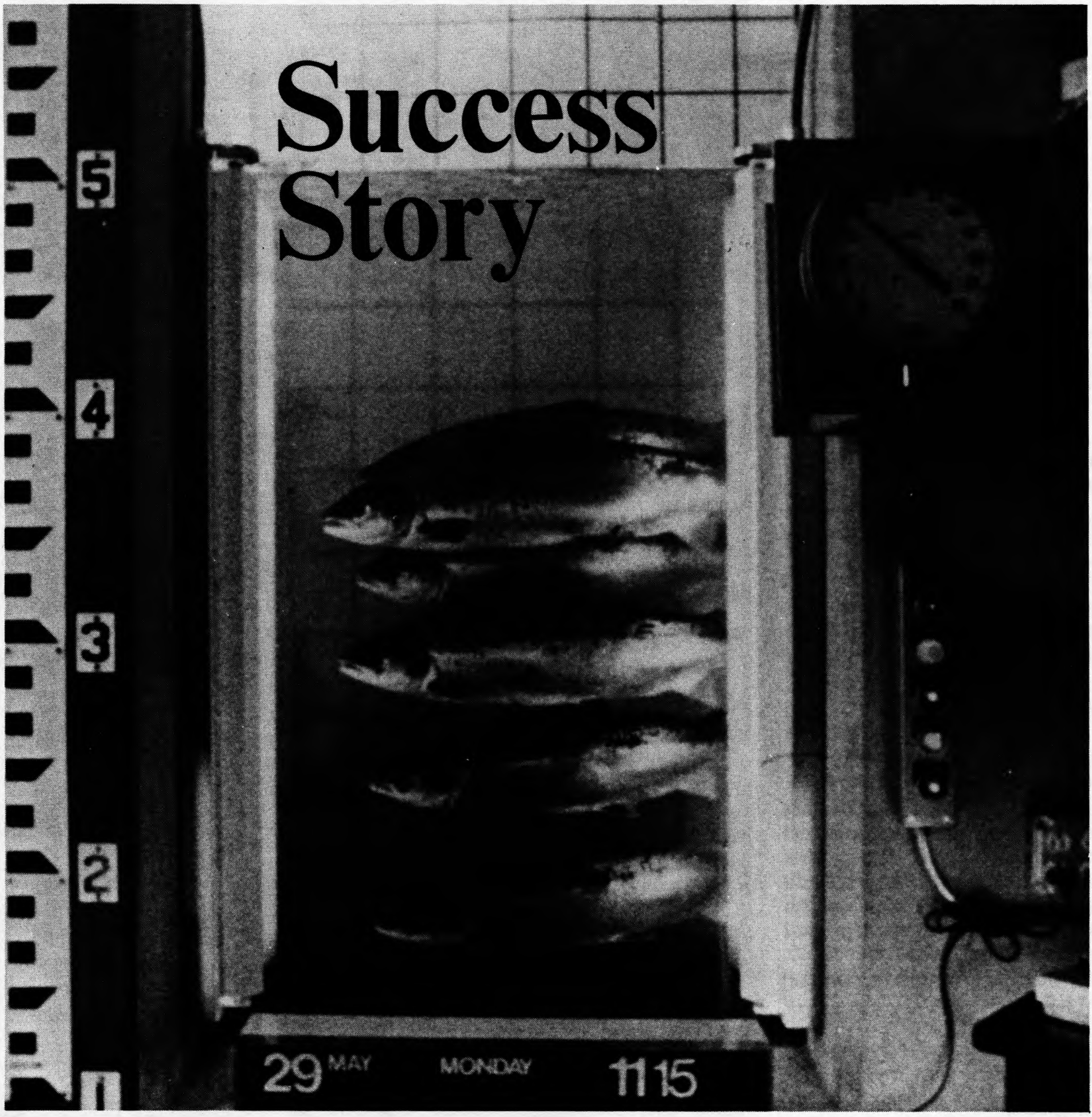
Connecticut Department of Environmental Protection

citizens' bulletin

Volume 7 Number 6 February 1980 $2/yr.

Success Story



Inside *We Accept, With Pleasure, 2; Salmon Program Counts 1979 Successes, 3; Osprey: Big Bird's Fortunes Look Up, 7; Coverup That's A Cleanup, 10; Monitoring Our Waters, 13; USDA and You, 14; Air: Getting the Lead Out, 15; FYI: Land Use Series, 17; CAM Implements Coastal Management, 18; 208: Hazardous Waste Siting, 19; Trailside Botanizing, 20.*

Richard Mulready, left, developer of 800 Mountain Road, a condominium complex in West Hartford, presented DEP Commissioner Stanley Pac and Ted Barbieri of the Department's Division of Conservation and Preservation with a check for $1,000 recently. The money was used for the purchase of a "Living Stream," an aquarium representing a cross-section of a typical Connecticut river.

The aquarium measures seven feet in length by two feet high and is equipped to contain trout and Atlantic salmon. The back wall of the aquarium will be painted to resemble an underwater scene characteristic of Connecticut rivers. An educational tool, the aquarium shows the environmental conditions needed for trout and salmon to thrive.

The exhibit was unveiled February 1 at the Sportsworld Exposition at the Hartford Civic Center. After the exposition, the "Living Stream" will be on permanent display in the DEP's Information and Education Unit on the first floor of the State Office Building.

Mulready and his partner, Thomas P. McDonagh, Jr., commented that the gift was selected to be in keeping with the environmental concern shown during construction at 800 Mountain Road where care was taken not to disrupt the natural features of the site. "The donation of the aquarium is another way of extending 800 Mountain Road's commitment to preserving the integrity of Connecticut's ecology," Mulready said. ■

DEP Citizens' Bulletin
(USPS 041-570)

Published eleven times a year by the Department of Environmental Protection. Yearly subscription is $2.00. 2nd class postage paid at Hartford, Connecticut. Funds are also provided through a federal grant from the Office of Coastal Zone Management under the Coastal Zone Management Act of 1972. Please forward any address change immediately.

Bulletin material maybe reprinted without permission provided credit is given, unless otherwise noted. Address all communications to the Editor, DEP Citizens' Bulletin, Department of Environmental Protection, Room 112, State Office Building, Hartford, Connecticut 06115.

Colonial Bankcorp

The George Dudley Seymour Trust Fund, administered by Colonial Bank of Waterbury, purchased and donated to the State a two acre parcel adjoining Dinosaur State Park in Rocky Hill. The property includes a house which will be used as a caretaker's residence and will also provide a site for a much needed maintenance facility at the park. The gift by the George Dudley Seymour Trust Fund will enable DEP to obtain matching Federal Land and Water Conservation funds sufficient to construct the maintenance building.

Left to right, Rich Kreuger, DEP Unit Manager at Dinosaur State Park, looks on as George A. Jensen, Corporate Vice President, Trust Division, Colonial Bankcorp, presents a check to Marshall Gardner; Arnold Liebowitz, Senior Vice President of Colonial Trust Management Corporation looks on. ■

Giant step forward: salmon program gets 125,000 pure Connecticut River strain salmon eggs

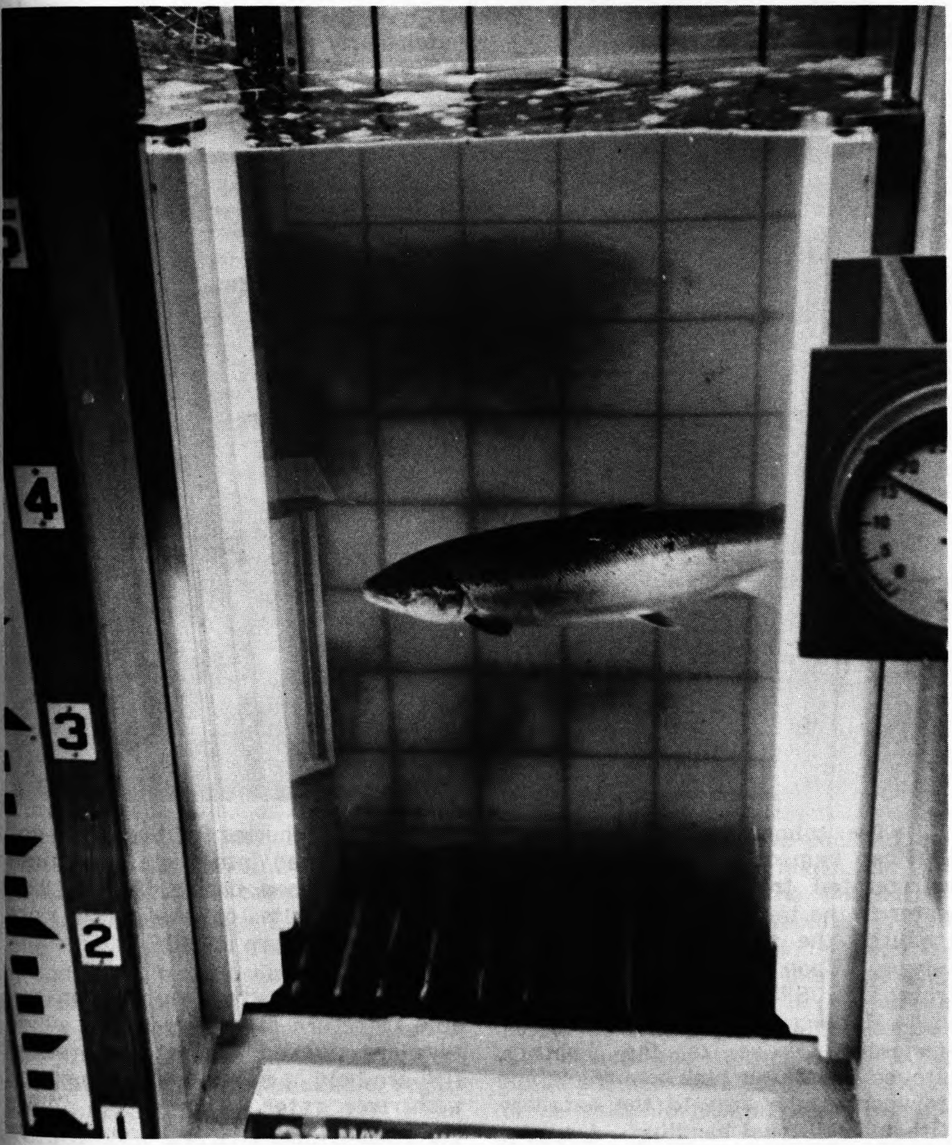
By Stephen Gephard, Research Assistant, DEP Fisheries Unit

Great progress was made during 1979 in the effort to bring salmon back to the Connecticut River. Between May and November, 60 Atlantic salmon, Salmo salar, returned to the river after spending two years in the North Atlantic Ocean. Of these fish, 32 were captured in the fishtrap as they ascended the fishway to pass the Rainbow Dam. The Rainbow Dam, located in Windsor, is the first obstacle to fish as they swim up the Farmington River, a tributary of the Connecticut River. This was the second year that salmon have returned to this fishway, constructed in 1976 and owned and operated by the Department of Environmental Protection.

An additional 19 salmon were captured in the fishlift at the Holyoke Dam, the first obstacle to fish on the mainstem of the Connecticut River. This fishlift is jointly operated by the State of Massachusetts and the U.S. Fish and Wildlife Service (USFWS). Two salmon were also captured in a pound net of DEP's Marine Region that was set in Long Island Sound at Old Saybrook. The remaining seven fish were captured by fishermen at various locations on the river.

The Connecticut River Anadromous Fisheries Restoration Program, which oversees the salmon restoration project, is a cooperative venture by the four Connecticut River basin states (Connecticut, Massachusetts, New Hampshire, and Vermont), the USFWS, and the National Marine Fisheries Service. The Connecticut River Restoration Program is one of a number of regional efforts to restore Atlantic salmon to rivers in New England, including the Penobscot and Merrimack Rivers.

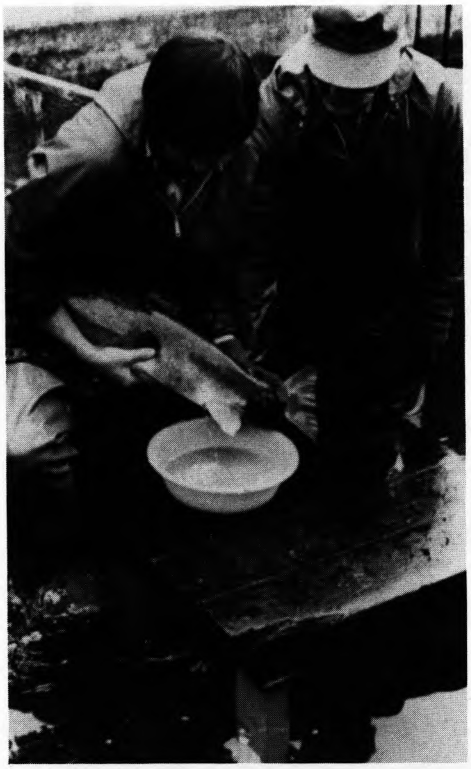
There are many factors that influence the number of salmon that return each year, including the number and genetic origin of young salmon stocked two years earlier, river conditions, and environmental conditions in the ocean. Such oceanic conditions



Stephen Gephard photos

Left, first salmon taken at Rainbow fishway on May 24, 1978. On May 29, 1979, fishway's camera caught the six adult salmon on our cover. Tiles, at rear, are six inch squares.

Average salmon caught at Rainbow has been 30-32 inches, 10-12 pounds. Largest was 43 inches, 20 pounds.



Above, Berkshire National Hatchery manager William Purcell watches Dan Flint spawn a female salmon. Below, Purcell and Flint watch Paul Gaston add milt of male salmon.

are believed to have been a factor in the low salmon numbers in streams of North America and Europe during 1979. Many biologists feel that a temporary decline in the numbers of capelin — a major food of salmon — contributed to the small salmon runs. Since the Connecticut River program is still in its early stages, it is impossible to assess what impact this oceanic event had on the salmon returns to the Connecticut River.

Even though more salmon were captured in 1978., 1979 represented a giant step forward for the program because a majority of the salmon captured survived to be spawned in the fall. At this point in the program, all returning fish are captured and removed from the fishways and are held at hatcheries to be artificially spawned. By spawning the adults and rearing the young in the hatcheries, biologists maximize the number of young salmon smolts that reach the sea and are able to return two years later as adults.

Although the salmon ascend the rivers in the spring, they do not spawn until late fall. Holding a large number of 30 inch fish that do not feed for nearly seven months is not an easy task, and last year all but two of the nearly 90 salmon that returned died before they were ready to spawn. Although there were several factors, a common salmon disease called furunculosis was believed to be the major culprit.

During the winter, program biologist studied the problems and sought solutions. By the time the first salmon of 1979 arrived at the Rainbow fishway on May 17, several modifications had been made in the program.

While in the fishtrap, the salmon were handled very gently and were placed in non-abrasive vinyl slings that held water at all times. A hood that loosely covered their heads quieted the salmon and prevented them from thrashing and injuring themselves while biologists inserted numbered tags through each fish's dorsal fin. The tags allowed individual identification of every fish, even when they were grouped together in the hatchery.

The salmon were lifted out of the trap immediately and placed in a refrigerated trailer tank. The cold water in the tank subdued the fish and inhibited the spread of infection or fungus. Upon notification, personnel from the USFWS Berkshire National Fish Hatchery in Hartsville, Massachusetts, drove to the fishtrap, hitched the trailer tank to a truck, and transported the fish to the hatchery without additional handling. A trailer tank was left at the fishtrap at all times.

Once at the Berkshire hatchery, salmon were given a bath in a solution that killed external parasites and were given injections of a furunculosis antiserum and an anti-bacterial agent. During their stay at the hatchery, the salmon were given baths in a salt solution whenever fungus appeared on them.

During the first two weeks of November, 38 of the salmon (24 females and 14 males) were spawned to produce 125,000 pure-breed "Connecticut River strain" eggs. Surplus males were taken to a USFWS hatchery in Vermont where they were spawned with females from the Penobscot River to produce a half-breed strain of eggs. In addition, the Penobscot River salmon program supplied the Vermont hatchery with over 250,000 surplus pure-breed Penobscot River eggs. All of these eggs will hatch early in 1980. The fish will be reared in hatcheries for two years and will be stocked into the Connecticut River watershed during March 1982. Surviving adults of this group are expected to return in 1984.

To insure that the salmon are able to return to the stream in which they are stocked, the hatchery-reared fish are held in riverside pools supplied with river water. This system allows the salmon smolts to imprint, or

The completion, expected in early 1980, of a fishway at the Leesville Dam on the Salmon River will allow efficient capture of adult salmon returning to this river as well as opening an additional 85 miles of streams to returning salmon and other fish.

memorize, the water's unique odor and provides means of recognition of the home stream when the fish return as adults.

Adding to the success of 1979 was the work on several facilities essential to the program. Construction of a fishway at the Leesville Dam on the Salmon River, the southernmost Connecticut River tributary slated for salmon restoration, was begun in October 1979. This East Haddam fishway, scheduled for completion in early 1980, will efficiently capture returning adult salmon and eventually allow salmon to continue upstream. DEP fisheries biologists are anticipating the return of some salmon to the Salmon River in 1980. The completion of the Leesville fishway will allow biologists to capture salmon in fishways on all three rivers with direct access to the sea — the Salmon, the Farmington, and the mainstem Connecticut. In addition, fishways at the Turners Falls Dam in Massachusetts were completed late in 1979 and a fishway at the Vernon Dam in Vermont is expected to be completed early in 1981. Although it will be some time, due to hatchery requirements for brood stock, before salmon are allowed to reach these fishways on the mainstem Connecticut River upstream of the Holyoke fishtrap, the structures will allow the American shad to regain its historical range to Bellows Falls, Vermont, for the first time since 1794.

The Connecticut DEP is also constructing an adult salmon holding facility in Peoples State Forest in Barkhamsted. The building, located next to the Farmington River, will contain concrete ponds, fed with well water, suitable for supporting as many as 200 adult salmon prior to their autumn spawning. The facility is expected to be in operation for the 1980 season and will provide a second and closer site for salmon holding. Program biologists believe that it is important not to hold all of the salmon in one facility in case of disease or other problems.

In their 1979 sessions, the Connecticut and New Hampshire legislatures approved Atlantic Salmon Compact legislation that will, upon passage by the other two states and ratification by Congress, establish a legal management body for the Connecticut River salmon resource.

The Connecticut River Atlantic Salmon Program is an ambitious effort that will take years to succeed, but every year progress is made, and 1979 was no exception. The Connecticut Department of Environmental Protection is doing its part by releasing smolts, constructing and operating facilities, and providing technical input. With the public's support, Connecticut and its Connecticut River Basin partners will succeed in restoring a valuable natural resource: the Atlantic salmon.

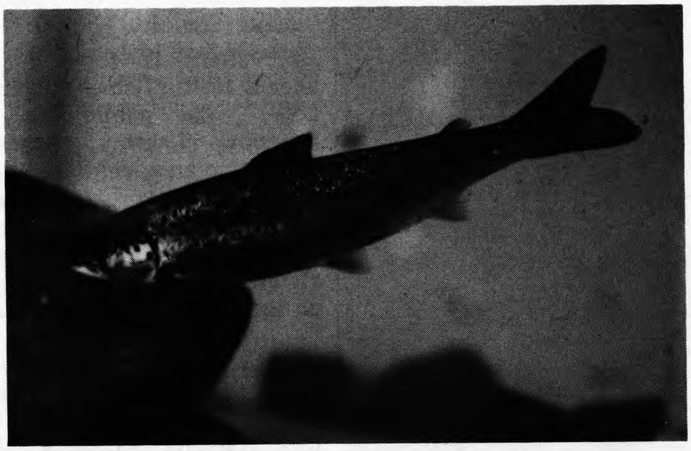
Visit a Fishway...

There is some limited public access to the fishways operated by the DEP. The public can get to the Rainbow fishway, salmon imprint pools, and an educational display in the town of Windsor by turning west off Rt. 75 in the village of Poquonock onto Rainbow Road and driving straight for about a half mile. A sign can be seen on the left side of the road.

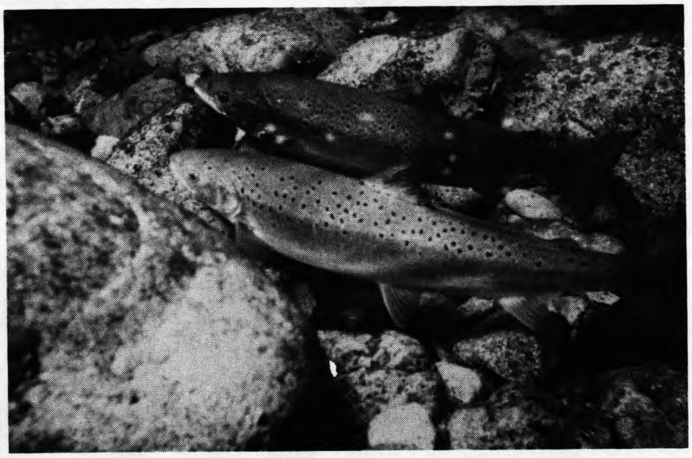
You can reach the Leesville fishway by following Rt. 151 to the bridge over the Salmon River on the Haddam-East Haddam boundary. Drive north on the road immediately east of the bridge for about 500 feet and follow a dirt road to the left a short distance to the dam.

The peak of salmon returns at Rainbow has been from mid-May to mid-June. Shad also use the fishway in large numbers during May.

Intake at Rainbow fishway.



Smolt



Adult Salmon

The International Atlantic Salmon Foundation

If You Catch a Salmon...

Atlantic salmon can be found in several popular fishing sites. Anglers should learn to identify salmon and know the proper actions to take. Signs posted along the streams by DEP Conservation Officers will help with identification.

Smolts (Out-going salmon)

These young salmon are very aggressive and are commonly hooked. They are often the size of trout and difficult to distinguish from trout although their tails are more deeply forked than those of trout and they are usually very silvery. It is illegal to keep a salmon less than 15 inches long and harmful to the program to keep the smolts because the more smolts that reach the ocean, the more adults that can return. Anglers should release all smolts as gently and quickly as possible.

Adults (Returning from the ocean)

Most adult salmon stay at sea for two years and average 30 inches in length and 10 pounds when they return. Some adults, called grilse, return after one year and average 24 inches in length and five pounds. In either case, they are much bigger than trout generally grow in Connecticut streams and provide a violent fight. Salmon caught from May to July will be silvery. Salmon caught after that may have turned dark with wavy, brown marks on their sides.

Anglers may legally keep one salmon per day but the Restoration Program encourages them to turn the fish over to biologists so that eggs may be used to produce more fish. A $100 reward for a live fish and a $25.00 reward for a dead fish is offered. Even if an angler chooses to keep a salmon, the Fisheries Unit urges him to report the catch.

Live salmon should be handled as little as possible and should not be removed from the water. They should be kept in cool, flowing water while a biologist is called. A pen or "corral" constructed with rocks at the edge of a river has proved adequate in the past. Covering the pen with a jacket or tarp will help to quiet the fish. Call one of the following numbers as soon as possible:

Fisheries Unit, Hartford - 566-2287
Marine fisheries, Waterford - 443-0166
Rainbow fishway, Windsor - 688-9594

During evenings or weekends, call any Conservation Officer or fisheries biologist listed in the DEP's "Abstract of Hunting and Fishing Laws" provided to each license holder. ■

Salmon Display

The five salmon that were a part of DEP's exhibit at the Eastern States Exposition in Springfield last September are now on display at the Mystic Marinelife Aquarium.

"They're doing very well," according to Bud Loomis, the aquarium's curator of exhibits, "and growing rapidly. They're not an animal we've had a lot of experience with, because they're hard to obtain. In fact, these are the first we've had, but so far they've proved pretty hardy."

In the "not too distant future," the salmon will be moved into a more permanent exhibit which will include explanations of current salmon restoration efforts.

All five of the salmon were hatched at the Quinebaug Valley Hatchery. The largest, a four-year-old female of the Penobscot (Maine) strain, went to Mystic 28 inches long and weighing six pounds and is getting bigger. The four smaller salmon, two-year-olds of a strain imported from Scotland, went to the aquarium as 10 to 12 inch fish. All have passed the one-foot mark, Loomis said, and the largest has grown to about a foot and one-half.

The Mystic Marinelife Aquarium is seven miles east of New London. Off Interstate 95, take Exit 90. It's open from 9 a.m. to 4:45 p.m. Admission is $4.50 for adults; $2 for senior citizens and youngsters from five to 17 years old. Children four and under are admitted free. Parking is free. Call 566-3323 for additional information and animal training demonstration schedules; call 536-4208 about group rates. ■

1979: Twenty-five young ospreys, an encouraging sign, a reminder of years of abundance

By Thomas R. Hoehn, DEP Wildlife Biologist

Richard Mikna, Groton Dept. of Utilities photos

Security and a good food supply are all it needs, yet this great hawk suffered one of the most serious population declines ever recorded in the Connecticut area. Ironically this black and white, eagle-like hawk was reduced from a common dooryard bird in many shoreline areas to a member of Connecticut's endangered species list in less than 30 years.

The osprey is a cosmopolitan bird but has rarely occurred in the munificent numbers attributed to the Long Island Sound area. Good descriptions for certain areas in the late 1800s indicate there were over 2,000 active nests between New York and Boston. Conservative estimates in 1875 have more than 500 active nests for Gardiners and Plum Islands. Arthur Cleveland Bent, in his Life Histories of North American Birds (1937), reported "wholesale evacuation" of osprey nests between 1885 and 1935. Plum Island, for example, was developed with hotels and cottages, efffectively reducing the most sensational nesting colony. In Massachusetts and Rhode Island in 1935 Bent observed less than half the number of osprey nests he had recorded in 1882. Bent considered the wholesale evacuation a mystery and reported that the remaining birds were concentrated where there was a better food supply.

In 1940 an estimated 1,100 active nests remained between New York and Boston. By 1973 only 115 active nests could be found in the same area. Many thought the osprey colonies of Long Island Sound were doomed. Others, however, had been busy in the 1960s identifying the cause of the decline. The most notable was Rachel Carson who stunned the world with her revelations about pesticide poisons in a book entitled Silent Spring. The rapid decline of the osprey population was attributed to the use of the pesticide DDT which was used to control mosquitoes and other pests beginning in the 1940s. Residues of the pesticides are concentrated by the food chain and stored in the tissue of fish consumed by osprey. After eating contaminated fish the osprey accumulate DDT residues which eventually result in egg shells that are too thin. The thin egg shells are too fragile to withstand the incubation process in affected osprey. Consequently, the use of DDT and other chlorinated hydrocarbon pesticides was banned in Connecticut beginning in 1970.

DDT is a persistent pesticide that remains accessible in the environment long after it has been applied. It took four years after the banning of DDT before improved osprey nesting success was noticeable. In 1974 we recorded the first increase in Connecticut osprey young since osprey records have been tallied — perhaps since the 1800s. Steady progress has continued in Connecticut since 1973, as shown in the table. Our neighboring states have shown similar improvement in nesting activity in recent years, but their average young per nest is somewhat lower.

Summary of Connecticut osprey activity since 1969.

Year	Observed Nests	Successful Nests	Young fledged
1969	16	7	10
1970	13	5	8
1971	12	3	8
1972	10	4	9
1973	10	3	4
1974	9	4	7
1975	10	5	10
1976	13	7	14
1977	14	9	20
1978	16	8	15
1979	17	15	25

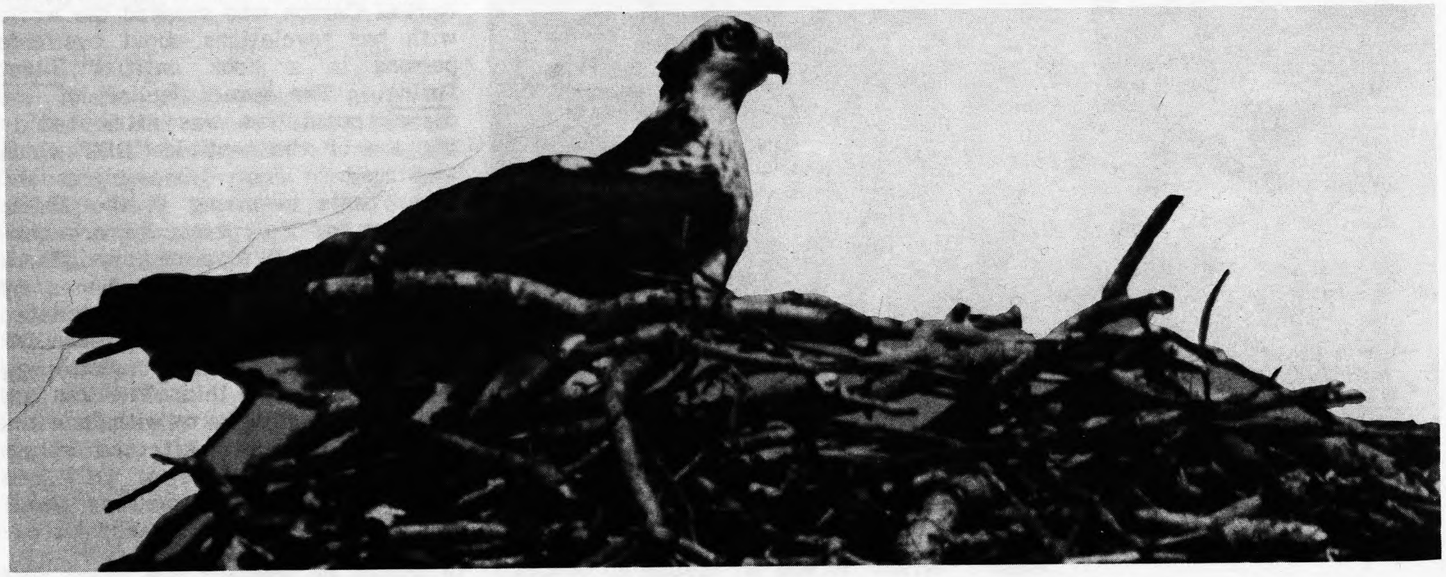
Osprey arrive in Connecticut in March after spending the winter in South America. They have historically built their nests primarily in trees, but have frequently nested on duck blinds, on the ground, and on numerous other protrusions, both manmade and natural. In 1979 a successful nest was located atop a 70 foot light tower in a busy parking lot in New London. Only one pair of osprey nested in a tree in 1979 and they were unsuccessful; all the successful osprey nests in 1979 were on manmade platforms.

Each year the birds add material to their nests: sticks, seaweed, rope, perhaps even cow dung, almost anything they can carry might become part of their nests. An interesting incident occurred in September of 1978 involving a fledging osprey and nesting material. We received a call from a birdwatcher in Waterford reporting a one-winged osprey in a nest at Goshen Pond. When we climbed the nesting platform we found a full grown young osprey missing one wing and one leg. Monofilament fishing line was wrapped around the stub of its leg, and the wound was almost healed. The missing wing showed a similar scar but was entirely healed. We removed the bird from the nest with the intention of donating it to the Bronx Zoo but it died two days later. It left us to wonder how long the parents would have cared for the double amputee.

Generally three eggs are laid in April, and the male bird feeds and tends the nesting female during the 28 day incubation period. Like most young birds, ospreys are very weak and vulnerable during the first days of their lives. Osprey parents are peaceful and gentle except when their young are in danger. Unlike other hawks, osprey will attack any intruder attempting to molest their young.

In 1978 a graduate student doing osprey research at Gardiners Island, New York, learned the hard way that the diving and screaming is more than a bluff. He was struck by the talon of an adult osprey while he attempted to weigh and measure the young. Luckily, the cut about an inch above his eye only required a few stitches.

Young are five or six weeks old before they are capable of standing up and feeding themselves. They are unusually well behaved, especially at feeding time,when they seem content to share and to take turns eating fish



brought to the nest by the parents. A week or more before they fly, young osprey exercise and test their wings vigorously within the confines of the nest. Once they begin flying in earnest they attempt to catch fish, but mostly unsuccessfully. They return to the nest repeatedly, and the adults continue to feed them. Normally the osprey nesting season in Connecticut is over by the end of August, and the birds indulge in post nuptial wanderings prior to the fall migration.

1979 osprey nesting activity in Connecticut and adjacent locations.

	Total active nests	Successful nests	Total young fledged	Average young/nest
Connecticut	17	15	25	1.5
Rhode Island	14	10	15	1.1
Massachusetts	22	15	25	1.1
Long Island, N.Y.	76	39	66	.9
Central Adirondacks (N.Y.)	23	9	14	.6

Ospreys feed exclusively on fish and are good neighbors to all other creatures. They tolerate attacks by swallows, kingbirds, red-winged blackbirds, crows, gulls and others with incredible patience. The flight of the osprey is strong, and its aerial gymnastics during courtship and on clear calm summer days are thrilling to watch. Like all hawks, ospreys have incredible eyesight capable of detecting the slightest movement of fish from heights up to 200 feet. They dive into the water with outstretched talons but catch their prey in less than half of their attempts. They seldom submerge their entire bodies in water — in ten years I have never seen an osprey totally submerged. In Connecticut, ospreys feed on menhaden, flounder, white perch, catfish, alewives, and other fish. I have observed an osprey dive from 100 feet into a freshwater lake, catch a mussel, and discard it after carrying it about 100 feet.

In addition to thoughtless man, ospreys have a few natural enemies in Connecticut. Raccoons, gulls, and crows will attempt to take eggs or young, occasionally with success. In areas inhabited by bald eagles, the eagles will pursue the ospreys and steal their fish.

We are encouraged by five successive annual increases of ospreys in Connecticut; but we haven't forgotten the years of abundance. In 1950 the Connecticut River alone hosted more than 100 pairs; in 1979 the entire state had only 20 pairs. We still have a long way to go. ■

COVERUP!

A tale that pits a monster sheet of plastic wrap against the ugly creature that creeps out of many a local landfill

No, it's not a wild flight of science fiction, but the story of a down-to-earth attempt to use existing technology in an unusual way to solve a common problem of solid waste disposal. The scene is the Windham landfill, now closed. The project is one of the first attempts, and at 22 acres the largest, at solving the problem of the pollution of water by a landfill using a "surface cap" of plastic.

Intentionally, from a technical point of view, the project is "not super innovative," according to John England, Senior Environmental Analyst in DEP's Soild Waste Management Unit. But it solves a serious problem far more easily than, for example, moving 22 acres of trash.

The general problem, leachate, literally does begin at home — when you throw out the things which, one way or another, make their way into your local disposal area, where they lie, in the sun and in the rain.

In Connecticut, the rainfall totals about 48 inches a year. About half of this evaporates back into the atmosphere, and another quarter runs off into rivers and streams. The final quarter sinks into the ground and gradually percolates its way down to the groundwater.

When rain falls on a landfill, or runs into it, this water works its way down through the garbage and the trash, the papers, cans, leftover cleaning products, old bug sprays, paint cans, household chemicals, and whatever else has been dumped in that particular disposal area. Water is physically active, carrying particles of some substances with it as it moves down through the ground. It is also chemically active, sooner or later dissolving most substances, so that readily soluble products are flushed through almost immediately while others, like iron, take considerable lengths of time. By the time water works its way through a disposal area, a once clean rainfall is transformed into the product called leachate.

"Leachate," according to one report by DEP's Solid Waste Management Unit, "contains any material which water may carry out of buried refuse. It has been described as being 100 times stronger than sewage." Leachate may contain iron, chloride, sodium, and chemicals that act as nutrients and fertilizers or that create oxygen demand when they seep into waters. Leachates may carry viruses, pesticides, toxic organic compounds like gasoline and carbon tetrachloride, toxic heavy metals, and possibly harmful chemicals like PCBs.

Leachate is eventually diluted to harmless levels in streams, ponds, or groundwaters to which it is discharged. It poses the most potential for harm when the discharge comes from a landfill lying upgrade of water supply wells or in a public water supply watershed.

Such was the case with the Windham landfill, the worst offender among about a dozen Connecticut disposal areas located in public water supply watersheds. A February 1977 DEP report stated, "Approximately one dozen of Connecticut's 168 disposal areas are located in public water supply watersheds. Of these twelve, Windham's is the largest. The Windham disposal area is also the one which is closest to the point where water is withdrawn for public use. The Windham disposal area is the only one in Connecticut from which the leachate discharges 'directly' into the drinking water supply impoundment." The report also said, "The leachate from this site represents the greatest potential for harming a drinking water supply of leachate from any site in the State."

The roughly twenty-five-year-old Windham disposal site sits in a broad flat valley adjacent to the Windham airport — and just 1,000, at its closest point, to 1,500 feet west of the Willimantic reservoir, source of drinking water for 16,000 to 18,000 people.

Back in August 1974 visual observation of contamination of ponds between the disposal area and the reservoir prompted DEP's issuance of an order that local officials improve the landfill operations and investigate the possibility of pollution of area ground and surface waters.

A consulting firm hired by the Town of Windham reported, after a study was completed in April 1976, that groundwater in the area was significantly altered by leachate. The consultant recommended that the Windham landfill be closed as soon as possible and before it expanded any closer to the reservoir.

The reservoir's waters have not shown any measurable pollution, but discharge into the reservoir every day of 43,000 gallons of leachate-contaminated-groundwater meant that during low flow in the reservoir one of every 160 gallons entering the reservoir was leachate. Furthermore, the full impact of the landfill's leachate plume had not yet reached the reservoir. To ensure sufficient dilution, the consultant recommended that the U.S. Army Corps of Engineers guarantee minimum flows in the reservoir at all times of 10.5 million gallons daily.

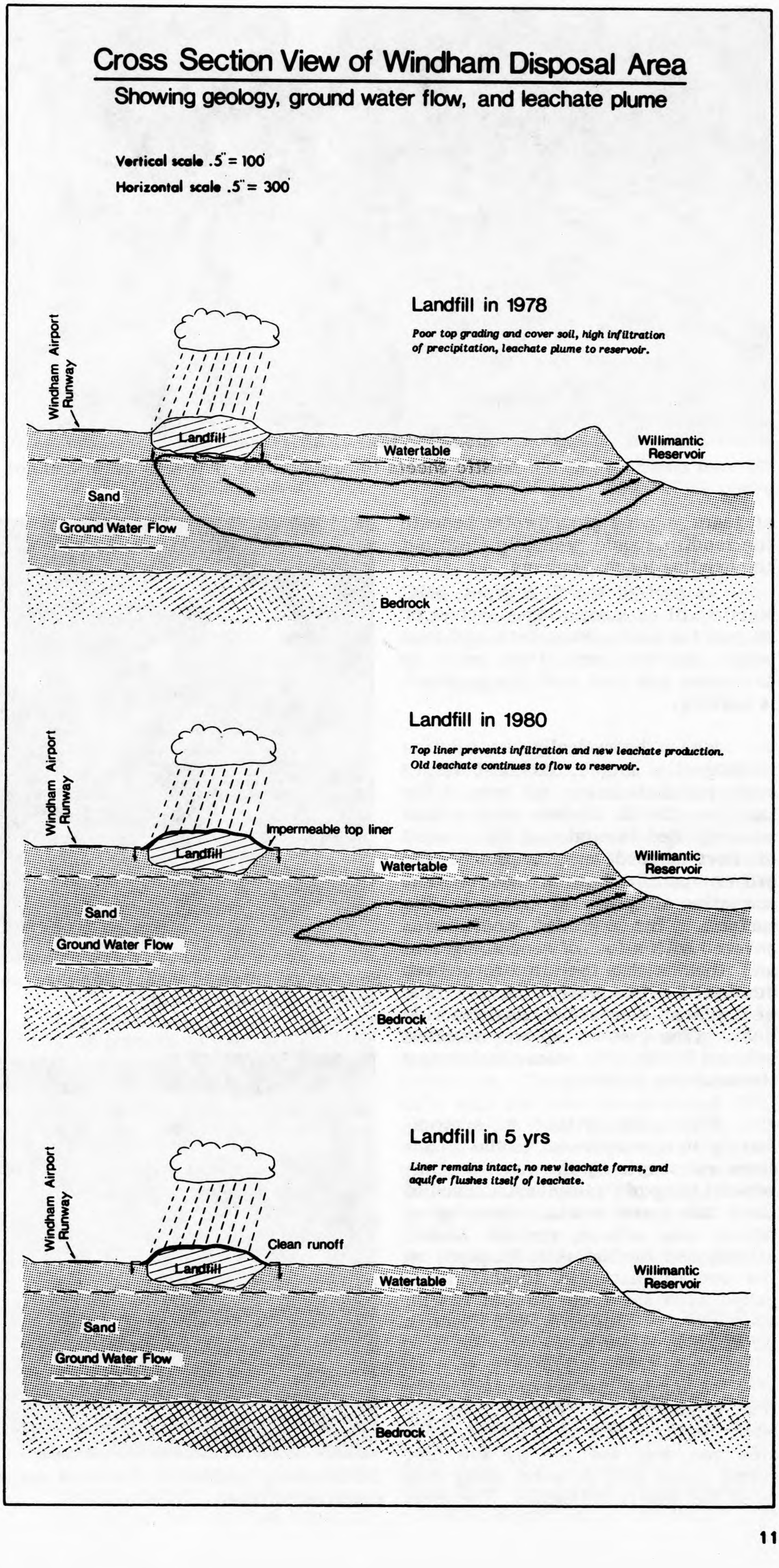
In May 1976, the Department of Environmental Protection mandated the landfill's closing within 18 months. There followed a long series of difficulties in finding an alternative site for waste disposal. Because of these, the landfill was not finally closed until September 1978.

In the meantime, in 1977, the U.S. Environmental Protection Agency (EPA) awarded a $450,000 grant to SMC Martin Associates of King of Prussia, Pennsylvania. Their project was to select a landfill with a serious leachate problem and develop a plan that would show how, with proper closing, using existing technology, these problems can be corrected. What was wanted, for the project, was a serious ground or surface water contamination problem that was already well studied and well documented. This was the case with the Windham landfill because of the monitoring which had been going on during the extended attempt at solving Windham's problems.

Other EPA criteria included that the landfill in question be closed or about to be closed; that it preferably be ten acres or less; and that the local governments involved be cooperative.

SMC Martin contacted the Connecticut DEP in March 1977 for site suggestions, and Windham's landfill was eventually selected from over 400 sites in 32 states.

The diagram at right illustrates how the surface cap will work. According to England, 98 percent of the natural infiltration of precipitation should be intercepted and routed away from the landfill by the cap. Preventing further infiltration should quickly — within a few months — eliminate the development of leachate by keeping water out of the deposited solid waste. As long as the cap remains intact no new leachate will develop. (Since it is protected from sunlight and punctures by a covering of soil, the plastic cap should last, England adds. Examples of this type of material, used under reservoirs and lagoons, are in the ground, intact, after 20 years or more of service.) Meanwhile, with no additional production of leachate, over the next couple



Cross Section View of Windham Disposal Area

Showing geology, ground water flow, and leachate plume

Vertical scale .5" = 100'

Horizontal scale .5" = 300'

Landfill in 1978

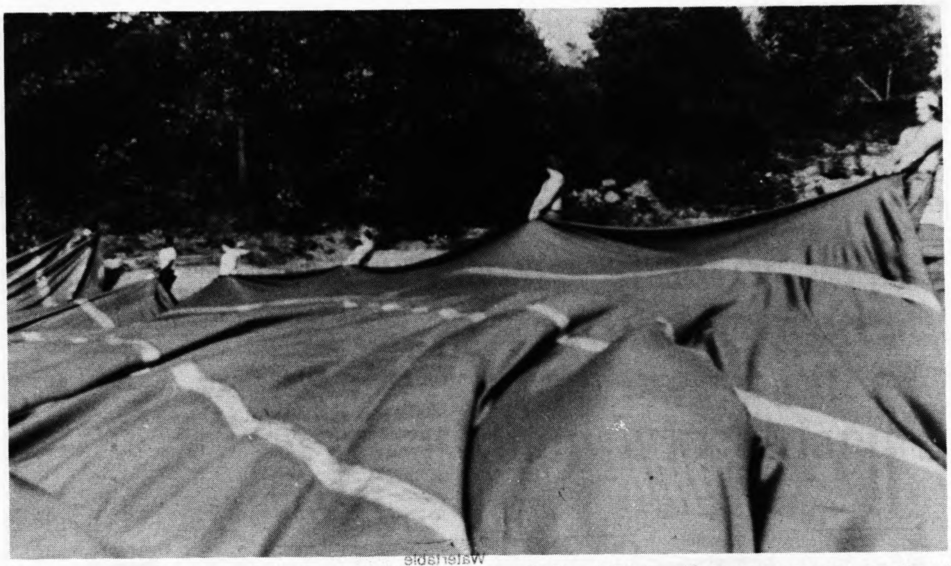
Poor top grading and cover soil, high infiltration of precipitation, leachate plume to reservoir.

Landfill in 1980

Top liner prevents infiltration and new leachate production. Old leachate continues to flow to reservoir.

Landfill in 5 yrs

Liner remains intact, no new leachate forms, and aquifer flushes itself of leachate.



Six men could spread the plastic sheets to full width -- if it was warm and not windy.

of years moving groundwater beneath the landfill should gradually flush out the existing leachate plume.

As part of the EPA grant, SMC Martin will be monitoring a system of 20 monitor wells, lysimeters, and four ponds for the next two years to determine just how well this approach is working.

While theoretically the solution is elegantly simple, its first large-scale installation was not easy. The landfill's 25- to 50-foot deep refuse was regraded to minimize the amount of liner needed and to provide for proper runoff of water and prevent formation of pools of water on the surface. The regraded landfill was covered with a foot of sand and gravel and then with a two- to three-inch cushion of silt to protect the underside of the 20 millimeter polyvinyl chloride liner. (The plastic cap was selected because it was most economical among the available choices.)

The cover arrived in approximately 30 sheets, precut to the proper sizes and shapes by the supplier, Universal Lining of Pennsylvania. Each of the 5,200 pound sheets, measuring up to an acre apiece, arrived folded, crated, and labeled with its place on the overall plan. A forklift truck pulled each sheet out to full length, and a crew of six men spread it out to its width.

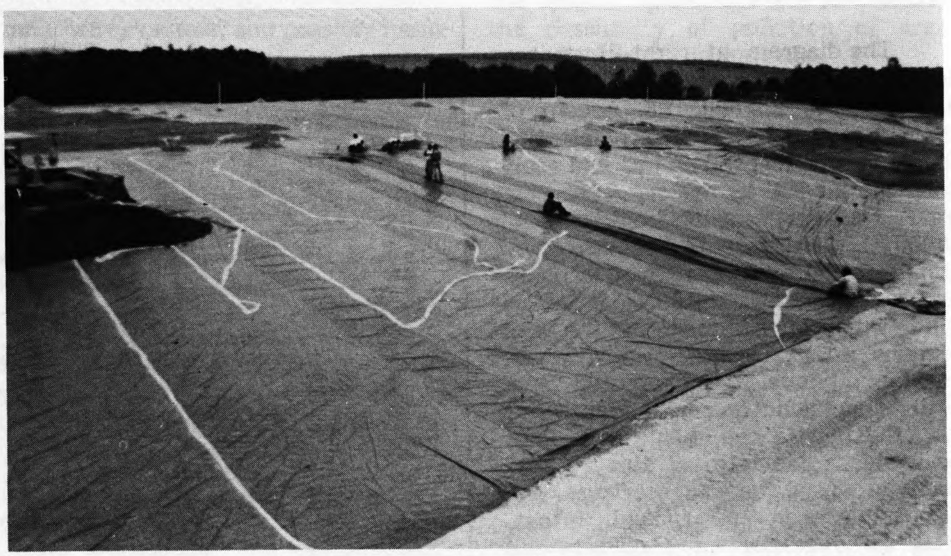
Laying the cap proved far slower than originally expected because the work required perfect weather. Six men can drag the 100 by 400 foot sheets — but only on warm sunny days when the plastic is flexible. The crew could not lay sheets if there was a significant breeze. If it was cold or rainy, it was considerably more difficult to seal the sheets together. Once the sheets were down, they had to be promptly covered with a final foot of earth, which will ultimately be planted to stabilize the surface. But when the weather cooperated, earthmoving equipment could not keep up with the crew laying the liner.

The site regrading, placement of the liner, and covering with one foot of soil was completed in early December. All that remains to be done is enriching the cover soil with local wastewater treatment plant sludge and seeding the top surface. This will be done in the spring.

The Town of Windham paid for the regrading and the two feet of

To page 16

Sealing the plastic sheets together went fast on nice days, was far slower if weather was cold or wet.



Earthmoving equipment followed crews laying the plastic, covering it with a final foot of soil.

Paul Dion photos

Network Monitors State's Water Quality

By Tess Gutowski, DEP Water Compliance Unit

Progress evaluation of Connecticut's Clean Water Program is largely based upon the DEP's Ambient Water Quality Monitoring Network. The ambient monitoring program is a requirement under Connecticut State Statute 25-54e(d) and the Federal Clean Water Act, Section 106e(l). Federal law requires each state to provide for and carry out as part of its program the "establishment and operation necessary to monitor and to compile and analyze data on the quality of waters..."

The Connecticut monitoring network is a cooperative DEP/United States Geological Survey (USGS) program which provides for frequent, usually monthly, sampling of surface waters at nearly 40 river and harbor stations. The objective of the monitoring program is to define long term trends in the physical, chemical, and bacteriological conditions of surface waters.

Important water quality parameters measured at the freshwater and marine network stations include total dissolved solids, dissolved metals, nutrients, coliform bacteria, and dissolved oxygen. In total, over 30 parameters are measured at each of the network stations.

Reliance on the ambient monitoring program is evident in the following Water Compliance Unit (DEP) activities:

1. Required Ambient Monitoring—The DEP/USGS monitoring program satisfies the ambient monitoring requirements of Section 106e of the Clean Water Act. It also provides four stations as Connecticut's commitment to the National Water Quality Surveillance System.
2. Water Quality Standards—The ambient data is used to evaluate changes in water quality conditions. Every three years, Connecticut's water quality standards must be revised in accordance with state and Federal laws.
3. Public Information and Education—The ambient data is used frequently by DEP's Water Compliance staff to respond to public queries concerning water quality. For example, the data has been particularly valuable in assessing PCB levels in major rivers across the state.
4. Sewage Treatment Plant Facility Plans—The ambient data is used routinely in the 201 facility planning process to evaluate existing water quality conditions and to assess water quality implications of proposed municipal construction grant projects.
5. 208 Non-point Source Program—The majority of the 208 study elements are not budgeted for monitoring and must rely on the ambient network for water quality information. For example, the ambient data is being used to verify the 208 model for the general non-point source study and the agricultural study.
6. Lakes Management—The ambient data is used in the Lakes Program to develop and evaluate eutrophication abatement programs for recreational impoundments. For example, the ambient data has provided valuable input to the Unit's studies of Lake Lillinonah, Lake Zoar, and Lake Housatonic.

Other government agencies and groups utilize the ambient data. Among those receiving monthly reports are the DEP Fisheries Unit, DEP's Natural Resources Unit, the Farmington River Watershed Association, and the Northeast Utilities Service Company.

Presently, the DEP provides $100,000 matching funds to the USGS, which does the actual sample collection and analysis. This year, the Department has proposed legislation to raise the funding to $300,000 in order to maintain and modestly expand the surface water program; to reinstate bed material sampling; and to develop and implement an ambient water quality monitoring program. The latter would include the development of a network of new and existing key monitoring wells and well analysis for organic solvents and other priority pollutants. The ambient groundwater data will tie into the proposed DEP groundwater quality standards. It will also facilitate investigations of groundwater contamination associated with industrial waste disposal, provide background quality data, and show trends. It may also be used in the development of groundwater supplies.

For your information: Published Ambient Water Quality Monitoring Data is available from the National Technical Information Services, Springfield, Virginia 22161, and the USGS Hartford Office. The publication by the USGS is entitled: "Water Resources for Connecticut, Water Year 1978; Report No: USGS/WRD/HD - 79/035; Report Date June 1979." ■

The USDA and You

By Ellen Harrison, RCA Coordinator

Five to ten million dollars of federal U.S. Department of Agriculture (USDA) money, your tax money, is spent annually in Connecticut for conservation-related work and projects.

Where does this money go? It goes primarily into research (Agricultural Experiment Stations, University of Connecticut, Forest Service lab), educational efforts (University of Connecticut Cooperative Extension Service), cost-sharing funds to help farmers reduce soil erosion and water pollution (Agricultural Stabilization and Conservation Service), technical assistance to individuals and government (Soil Conservation Service), planning and construction of flood control measures (Soil Conservation Service), gathering and disseminating soils information (Soil Conservation Service), and low interest loans and grants for conservation and water pollution control works (Farmers Home Administration).

Will we meet our long-term national needs for food and fiber? What will be the impact of food production on soil, water, and related resources (wildlife, wetlands, etc.)? Are present USDA conservation programs helping to meet our needs? An analysis of such questions by the USDA, mandated by Congress in the Soil and Water Resources Conservation Act of 1977 (RCA), is available for public review and comment until the end of March 1980, at which time the draft RCA program will be revised in light of comments received.

Alternative soil and water conservation program strategies are proposed in the RCA document -- strategies ranging from voluntary to regulatory compliance and from continuing present federal programs unchanged to reducing federal agency involvement to passing money to the states for the support and development of state conservation programs. Public input will help to determine the alternative(s) selected. Recommendations will go to the President and Congress and will be the basis for future USDA budget requests.

The voice of Connecticut residents must be heard. National emphasis on the major farm production regions threatens to reduce support for needed conservation work -- both agricultural and non-agricultural -- in our state. Urban/development related conservation needs and programs are only lightly touched on in the 1980 USDA RCA Program, yet they are an important part of USDA conservation efforts in Connecticut.

What can you do? Become informed. A summary of the federal RCA Program is available, and a public informational meeting is scheduled for March 3, 1980, from 1-3 p.m., at the Wethersfield Ramada Inn. The full three volumes of federal RCA material and copies of the summary are available at numerous locations including the eight Soil Conservation Service Offices, the Department of Environmental Protection's Natural Resources Center, and the State League of Women Voters Office in Hamden. Respond. Comments, questions, and opinions should be sent by March 28, 1980, to: USDA RCA - Response Analysis Center, P.O. Box 888, Athens, Georgia 30603.

Here in Connecticut, the Connecticut Council on Soil and Water Conservation received a USDA RCA grant to take a broad look at soil, water and related resources in Connecticut. We are analyzing resource problems and the role of existing agencies in meeting conservation needs as the background for developing a Connecticut Program for the Conservation of Soil, Water and Related Resources. Want to know more? Write Ellen Harrison at Room 561, State Office Building, Harford, CT 06115, or call 566-3540. ■

Quinebaug's Fishing Ponds Open March 1

The public fishing ponds at the Quinebaug Valley Hatchery will open on March 1, 1980, and will operate on weekends and holidays.

The public fishing facility at the Quinebaug Valley Hatchery consists of two ponds, each two acres in size. One pond is restricted to fly fishing with single barbless hook, and the other pond is restricted to fishing with lures equipped with a single barbless hook. Each pond is stocked with more than 1,000 trout from 9 inches up to more than three pounds.

Admittance to these ponds is by permit only. Applications can be obtained from the Fisheries Unit, Room 255, State Office Building; the regional offices of the Department of Environmental Protection; or the Quinebaug Valley Hatchery. Applications must be returned to the Fisheries Unit and must be received at least six days before the desired reservation date.

Permit holders will be allowed to fish for three hours. There will be three periods, 8:00 a.m. to 11:00 a.m., 11:30 a.m. to 2:30 p.m., and 3:00 p.m. to 6:00 p.m., until April 30th. Beginning on May 1st, there will be four periods: 6:30 a.m. to 9:30 a.m., 10:00 a.m. to 1:00 p.m., 1:30 p.m. to 4:30 p.m., and 5:00 p.m. to 8:00 p.m.

Anglers are allowed to catch and release any number of fish and are allowed to continue fishing (within the three hour period) until one fish is killed or creeled. Last year some fly fishermen caught and released as many as 60 fish during three hours of angling.

This is an excellent opportunity to sharpen up your fishing skills before the regular season opens, and the cost is only $1.00. Juveniles under 16 years of age must be accompanied by a licensed angler over 21 years of age and must also pay the $1.00 fee. ■

Getting the Lead Out of Connecticut's Air

The accumulation of airborne lead fallout in house dust and street dirt can reach levels high enough to cause excessive lead levels in children, a problem because young children are both particularly susceptible to effects of lead and prone to putting dirty hands and other objects in their mouths.

Randy Sheinberg

On the basis of DEP's initial analyses of airborne lead levels, Connecticut is going to have to start "getting the lead out" of its air and will have to amend its just completed State Implementation Plan for air quality to include strategies for dealing with lead.

Measurements during the last quarter of 1978 found levels of lead at seventeen Connecticut sites at one hundred and fifty to one hundred and sixty percent of the 1.5 micrograms per cubic meter ($\mu g/m^3$) standard established by the federal Environmental Protection Agency. Most of the sites are in high pollution, high traffic areas where lead levels would be expected to be the highest, according to Joseph Magyar, Assistant Director of DEP's Air Compliance Unit.

"We have known that the EPA would set an ambient air quality standard for lead, and for the last couple of years we've been taking a more intensive look at the airborne lead problem," Magyar said. "We have been measuring at places like heavy traffic areas in larger cities where you would expect to find high levels of lead, along with high levels of the other pollutants we were also measuring. But we haven't been looking specifically for the worst lead levels."

Among the cities with sites where high airborne lead readings were recorded were: Ansonia, Bridgeport, Danbury, East Hartford, Hartford, Meriden, Middletown, Naugatuck, New Haven, New Britain, Norwalk, Torrington, and Waterbury. Readings ran from just slightly above the federal standard to as high as 2.24 $\mu g/m^3$ and 2.48 $\mu g/m^3$ at two sites.

As of October 5, 1978, as a result of a suit brought by the Natural Resources Defense Council, the federal EPA requires that states monitor airborne lead along with other "criteria pollutants": ozone, suspended particulates, carbon monoxide, nitrogen dioxide, and sulfur dioxide.

The EPA also requires that State Implementation Plan (SIP) be modified in the near future to include strategies for dealing with lead where levels exceed the standard.

Magyar estimates that most airborne lead comes from gasoline burned by automobiles. He points out, however, that the State does not have control over gasoline lead levels.

Air Compliance Unit Director Leonard Bruckman said, "The EPA's program to phase out leaded gasolines should result in standard attainment statewide, assuming the program is implemented in a timely manner." Connecticut, he notes, does not have major industrial lead sources, such as primary lead smelters, which are likely to cause standard violations.

Reduction of airborne lead will not immediately end problems, since a significant part of the problem with lead is its "fallout" or accumulation in dust and dirt — as happens along roadsides, for example.

Research published in 1974 and 1975 by scientists from the University of Connecticut School of Medicine, Department of Pediatrics, the Connecticut Department of Health Services, and DEP's Air Compliance Unit found airborne lead fallout in house dust and street dirt was high enough to be capable, theoretically, of causing excessive lead accumulations in ten urban children studied. It was formerly believed lead-based paint was the major factor accounting for high lead levels in children, but leaded paint was eliminated as significant in this group.

The most basic problem, at the federal level, was arriving at a standard which will protect the public health. The EPA set standards to consider a multiplicity of factors including: the fact that exposure to lead can occur by ingestion as well as by inhalation; the multiple sources of lead exposure — paint, ink, drinking water, pesticides, and foods as well as airborne lead; the fact that some segments of the population, notably young children, are more susceptible to the effects of lead — as well as probably more likely to ingest lead in dust and dirt; and the fact that the effects of lead on some segments of the population, notably pregnant women and fetuses, is unknown.

The 1.5 $\mu g/m^3$ averaged over a calendar quarter standard has been proposed as a standard safe for indefinite exposure of young children. The EPA originally proposed a monthly average, altered on the basis that a quarterly standard would improve the validity and leave little possibility for sustained periods of significantly higher lead elevations.

The EPA received ninety-five written and oral comments addressing the proposed standards -- four of these, including one from representatives of the University of Connecticut School of Medicine, felt the standard was not sufficiently protective.

The bad news about lead is not entirely bad, Magyar says, although the problem is a serious one. The Air Monitoring Unit first measured lead levels in 1970, and those early measurements showed higher levels than today's, despite the fact that current, more sophisticated sampling instruments collect small particles more efficiently.

Magyar credits the slightly lower lead levels to the phase-down of use of leaded gasoline in automobiles. The closing of municipal incinerators (which probably vaporized a certain amount of lead solder from tin cans), the addition of "bag houses" in certain metals industries, and the State's efforts to control suspended particulates may also have played a minor part in the improvement.

It's not clear what effect current gasoline shortages will ultimately have on the federal program requiring the reduction of lead in gasoline. President Carter has postponed for one year (to Oct. 1, 1980) the reduction to 0.5 grams per gallon originally scheduled to be implemented by October 1, 1979.

According to Barbara Ikalainen, Environmentalist with EPA Region I, it is not clear whether the whole projected schedule for reducing lead in leaded gasoline to trace amounts (0.05 grams of lead per gallon) by 1990 will now be set back.

"The energy savings, due to the delay," Ikalainen says, "will be insignificant. And the accumulation of lead fallout will just continue." In addition, use of leaded gas in cars with catalytic converters quickly disables the catalyst and puts the pollution control systems out of commission, resulting in up to eight times the levels of emissions according to EPA figures.

(Unleaded gasoline, if the octane is high enough, can be used in older cars, notes Air Pollution Engineer Robert Waz. Leaded gas, he says, offers no advantage except price. Unleaded should, in fact, offer slightly higher gas mileage. Waz recommends "The Great Gasoline Gouge," Consumer Reports, April 1979, pp. 191-195, for more information on gas costs, octane ratings.)

Connecticut's expanded lead monitoring effort poses some technical questions. DEP is negotiating with the EPA about measurement periods and sampling processes.

In respect to the measuring of lead levels, EPA's standard specifies a calendar quarter. The Air Monitoring Unit, and proposed Connecticut regulations on which a public hearing was held on June 12, specify a three-consecutive calendar-month period which is not necessarily a calendar quarter since, as Magyar says, "From the standpoint of health, there's no difference in the world what ninety-day period you're talking about. In Connecticut the December-January-February period tends to have the worst lead levels." He guesses that reasons for this include cars' burning more fuel and idling more and early morning weather conditions that tend to be more stagnant.

The sampling process is also at issue. The EPA proposes twenty-four-hour sampling every six days. DEP's Air Monitoring Unit has developed an instrument which should be able to run continuously for ninety days. The Unit has compared the ninety-day method's performance with that of the method proposed by the EPA and finds the continuous method works just as well. ■

Plastic Cap Solves a Pollution Problem

From page 12

cover soil ordinarily associated with any landfill closing, but the EPA grant covered the closing plan, the $106,000 cost of the plastic cap, and two years of water quality monitoring. While surface capping adds to the total costs of closing a landfill, it should be well worth it if it can solve the serious problems of water pollution caused by landfills.

An added selling point for the closing of the Windham disposal area: it should expand the potential for use of the Windham airport by eliminating the landfill's seagull population. The gulls feed at the disposal area, get water at the reservoir, roost in the area, and create a hazard that has meant that the airport cannot serve small jet aircraft. (According to Federal Aviation Administration regulations, no jet airport can be located within two miles of a landfill because of the potential for problems from blowing litter and from seagulls which can be sucked into jet engines.)

"Closing the Windham landfill," England notes, "has been a long, difficult, and expensive procedure for all involved. Unfortunately, the whole situation began when the landfill was improperly sited to begin with, at a time when there was no State permitting responsibility, no documented landfill hazards, and no adjacent State airport. Problems such as this will be avoided in the future by rational statewide disposal area siting and proper engineering." A future article will discuss what constitutes a good landfill site from an environmental standpoint. ■

Lifeguards Wanted

Competitive examinations for positions as Connecticut State Park lifeguards will be held at Central Connecticut State College on Saturday, March 8, and, if positions are still open, on Saturday, March 22, and Saturday, April 5. Application forms and informaiton are available from DEP's Parks and Recreation Unit, Hartford, CT 06115 (566-2304).

Send a friend . . .

a subscription to the DEP Citizens' Bulletin. Just $2 for 11 issues. Send check or money order to Ed., Rm. 112, State Office Bldg., Hartford, CT 06115. Include zip code.

For Your Information

By Martina Delaney,
Citizens' Participation Coordinator

Land Use Seminar Series Offered for Local Officials

A comprehensive land use seminar series for local land use decision makers will be offered this spring beginning Tuesday, March 11. Six evening sessions will be held at the Cooperative Extension Service Office, 1280 Asylum Avenue in Hartford. There will also be three all-day Saturday field trips.

The series has been held annually at different locations throughout the state by the Department of Environmental Protection and the University of Connecticut Cooperative Extension Service and several other organizations. The course will be directed to new town conservation commission members but should also be valuable to any member who has not attended a previous course. Individuals who complete the entire course will receive three Continuing Education Units from the University of Connecticut Continuing Education Extension Division and a Certificate of Completion.

Instructors are from a variety of agencies including the Department of Environmental Protection, the University of Connecticut, the Soil Conservation Service, the Health Department, regional planning agencies, municipal government, and the legal profession. The first evening session addresses resource base availability, the basic local planning process and its players, and reading maps. The second session is titled "The Legal Framework" and will cover commission authorities, staying out of legal trouble, developing regulations and ordinances, and important legal precedents.

The third and fourth sessions will each be devoted to the discussion of two or three natural resource topics which relate to land use. These may be federal or state regulatory programs, delegated authorities, natural system processes, or specific resource conditions within the state. These sessions may cover sewer avoidance, lake eutrophication, erosion and sedimentation control, ground and surface water supply management and protection, flood plane management, septic system design and suitability, prime agricultural land, etc.

The fifth session will stress the subdivision, including an examination of the review procedure, the legal sequence of events, the municipal players, a resources review checklist, the contents of subdivision proposals, and the role of consultants.

In session six, the topic will be the natural resource elements in the modern plan of development process and how these relate to the zoning map.

The three Saturday field demonstrations are titled "Earth Materials and their Use Capabilities," "On-site Review of a Proposed Subdivision," and "Regional and Local Decisions for Regional Resources."

Registration materials and announcements are now being mailed to all town Planning, Zoning, Conservation, and Inland Wetland Commissions but the course is open to all members of town Boards and Commissions as well as their employees. Cost of attending the series will be $50 per town for officials or $15 per individual.

The six evening sessions will be held Tuesdays, March 11 through April 15, from 7:30 to 10:00 p.m. in the Hartford Cooperative Extension Offices. The Saturday field demonstrations will be March 29, April 12, and April 26 from 9 a.m. to 4 p.m. Meeting places for these will be announced.

If you have not received an announcement and registration forms, please contact Martina Delaney at 566-3489. ■

Society Lists Soil Scientists

The Society of Soil Scientists of Southern New England has published its 1979-1980 edition of "Certification of Professional Soil Scientists by The Society of Soil Scientists of Southern New England." The publication lists 53 society members who meet specific qualification standards in the field of soil science.

The purpose of the Society Qualification System is to foster and maintain professional competency among soil scientists and to protect the public interest in the area of wise use of soil and land resources. Standards for the system are based on formal education in soil science and on field, research, and teaching experience as they relate to soil classification, mapping, and interpretation.

The list is a useful resource for Planning and Zoning Commissions, Inland Wetlands Commissions, and Conservation Commissions as well as for engineers and developers.

Copies are available from the State's eight Soil and Water Conservation Districts as well as from:

Edward H. Sautter, President
Society of Soil Scientists of Southern New England
P.O. Box 258
Storrs, Connecticut 06268

Steven F. Tessitore
Room 201
State Office Building
165 Capitol Avenue
Hartford, Connecticut 06115 ■

coastal
area
management
71 capitol avenue hartford conn. 06115

CAM NEWS

CAM Holds Implementation Workshops

During December, workshops on coastal management were held for municipal and DEP officials. They were scheduled in anticipation of the Coastal Management Act's effective date of January 1, 1980. A total of sixteen meetings designed to inform officials of their responsibilities under the Act were conducted.

Stamford, Waterford, Guilford, Groton, Old Saybrook, New Haven, Norwalk, and Stratford were host locations for the municipal workshops, with towns in each of the eight regions attending. Representatives from the 36 coastal communities, including the boroughs of Stonington, Woodmont, Groton Long Point, and Fenwick, were present. In total, about 350 people attended, and although the majority consisted of local officials, members of the news media, interested groups, and citizens were also present.

The municipal workshops covered such topics as mapping the local boundary, identifying coastal resources as defined by the Coastal Management Act, standards for reviewing coastal site plans, and CAM-prepared materials available for technical assistance.

For DEP officials, similar informational meetings were held in order to ensure coordination and consistency among the department's units. In total, eight meetings were held with representatives from the various units. Units in attendance included: Planning and Coordination, Natural Resources Center, Wildlife, Parks and Recreation, Fisheries, Water Resources, Water Compliance, Air Compliance, Solid Waste, Noise Control, Hazardous Materials Management, and Adjudication.

Follow-up meetings are planned for the near future, as well as meetings for other State agencies. Coordination among other State agencies has been a continuing goal for CAM since establishment of its Advisory Board in 1976. Representatives from each of the major state agencies affected by coastal management are on the board.

Coastal Materials Available

Where Land and Water Meet, a 60-page booklet prepared by the National Ocean Industries Association, is available free of charge from the CAM office. Call or write. The booklet, which was funded and distributed by the federal Office of Coastal Zone Management (OCZM), reviews and evaluates coastal management from the perspective of ocean industries.

Aside from reviewing the federal Coastal Zone Management Act and the progress made to date under the program, the booklet gives a brief synopsis of the status of industries such as energy, drilling, construction, supply, transportation, shipbuilding, fishing, and others dependent on the viability of the coast and its waterways.

The Connecticut CAM office has a very limited supply of the booklet, which will be distributed on a first-come, first-served basis, with preference given to Connecticut residents. Additional copies may be obtained from the OCZM.

Our Love for the Land and Sea posters are still available free of charge to anyone who appears at the CAM office in Hartford. Stop by if you are in the area and get some. The poster, approximately 36 by 24 inches in size, is a reproduction of a batik designed by Shelley Kuroda, Farrington High School, Honolulu, Hawaii. Rich earth colors and hues of blue and green make the poster an eye-catching and attractive decoration. Multiple copies will be made available to all organizations upon request. ■

Conference On Marketing Waste Materials

DEP's Solid Waste Management Unit will offer a day-long conference dealing with "The Marketability of Combustible Solid Waste and Source Separated Materials" on Wednesday, March 26, 1980. The 9 a.m. to 4 p.m. workshop, at the University of Hartford's Auerbach Auditorium in West Hartford, will include representatives from the markets for recoverable waste materials and combustible waste products. It will be geared to encouraging town executives and members of local organizations in their development of recycling efforts.

The conference is scheduled to open with a group of speakers from the markets for source separated waste materials. These include: William B. Cox, vice-president and general manager of Lydall, Inc., a fiber recycling company; Harold Feldman, director of environmental affairs, and Albert B. Gledhill, reclamation center manager, with Glass Containers Corporation; and a representative from the metals recycling industry.

Representatives from several active local source separation programs will present a panel on the pragmatic concerns of recycling efforts.

The afternoon session will focus on large and small scale refuse-derived energy facilities. Speakers are: Bruce J. Chimento, vice-president for development and municipal services, Connecticut Resources Recovery Authority, whose Bridgeport facility is producing a fuel from refuse; Philip Olson, United Illuminating Co., the energy market for the Bridgeport facility's fuel product; John Cunningham, vice-president of Combustion Engineering, Inc., Resource Recovery Systems, manufacturers of energy recovery equipment; and Thomas C. Pond, consulting engineer with Camp, Dresser, and McKee of Boston, who will discuss smaller scale, modular combustion units.

Registration, including lunch, is $8. For additional information, contact DEP's Solid Waste Unit at 566-5847. ■

208 water quality management

208 Study Recommends Hazardous Waste Siting Board

The Connecticut 208 Program, a federally funded water pollution control agency, has been studying the feasibility of developing hazardous waste treatment and disposal facilities in the State. In the last two issues of the Citizens' Bulletin, a basic overview of the study was presented. This included details of the inventory of the nearly 100 million gallons of hazardous waste annually generated in Connecticut as well as an analysis of the legal and institutional issues related to the ownership and operation of such facilities. The 208 Program has recommended that such facilities be developed by the private sector. The demand obviously exists; the private sector has the needed technological and business expertise; and private facilities, if closely regulated, can be as environmentally sound as public facilities. If necessary, government involvement can take the form of financial incentives.

It becomes readily apparent that the key problem in developing hazardous waste facilities will be siting. With the exception of a few sensitive areas such as wetlands, coastal zones, and water supply watersheds, environmental protection laws will probably not eliminate the siting of hazardous waste treatment, storage and disposal facilities in Connecticut. However, these laws will definitely add time and expense to the siting process and will dictate the specific site design and pollution control standards that any particular facility will have to meet. Bear in mind, though, that compliance with such laws will inevitably help to ensure that the resulting facility is clean and safe — qualities which are important to everyone.

The most significant barriers to siting hazardous waste treatment, storage, and disposal facilities are political, not environmental. There are many areas in the State that can accommodate a facility in accordance with applicable environmental requirements. However, local opposition, manifested through zoning or land use ordinances, tends to move the siting decision out of the realm of environmental science and into the political arena.

The Connecticut 208 Program strongly recommends giving authority to a central state commission or board to make binding decisions on the location of hazardous waste facilities. This board should be guided by carefully defined siting criteria and would have to conform to demanding administrative procedures in order to ensure an open and thorough decision-making process. This is especially important if local interests are to be protected during the siting exercise.

To this end, the Connecticut 208 Program has drafted siting board legislation and submitted it to the Environment Committee for consideration during the current legislative session. It is envisioned that such a siting board will include local representation from any area under consideration for a facility. A developer would have to meet extensive environmental criteria in order to be issued the appropriate permits from the Department of Environmental Protection prior to the issuance of a permit from the siting board. In this manner a proposed facility would undergo rigorous environmental, political, economic, and sociological review before it could be built. While not a perfect system, it certainly would make great strides towards ensuring that Connecticut develops the safest possible system available for treating its hazardous, industrial wastes. ■

By Joseph M. Rinaldi,
208 Public Participation Coordinator,
P.O. Box 1088, Middletown, Ct. 06457

Pheasant Hunting Questionnaire

The Wildlife Unit will be conducting a survey of pheasant hunters this coming year. A questionnaire has been developed that is attached to the 1980 hunting license. Sportsmen are asked to fill out the questionnaire completely and detach and drop it in the mail. Responses to this survey will reflect pheasant hunting activities during the 1979 season.

The DEP and its predecessor agencies in Connecticut have been actively involved with pheasant release programs for some 70 years. Pheasant hunting has become a popular recreation for thousands of hunters, but over the years it has become difficult to maintain pheasant populations at satisfactory levels. The rising costs of pheasants and the growing demands have contributed to the problem. With this in mind, it is necessary to evaluate pheasant hunting and DEP's current release program.

This survey will help gather valuable information on the number of pheasant hunters, what type of areas and when they hunt, portions of the present season utilized, number of times they hunt birds and small game, number of birds harvested, hunting related expenditures, and other pertinent information.

It is important that we have input from all sportsmen utilizing our pheasant program. These responses will help us plan for the future and better serve the sportsmen of Connecticut. ■

Publications

The supply of recently published "Major Sources of Ground-Water Contamination in Connecticut," prepared by the U.S. Geological Survey as part of the 208 program, has been exhausted. The document and eight separate maps were prepared as part of a statewide study which identifies potential sources of ground-water contamination.

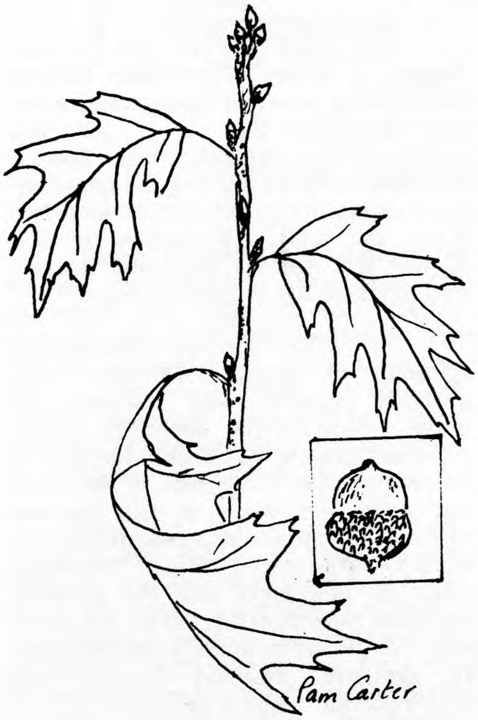
Copies are on file and available for public review in each regional planning agency and Soil and Water Conservation District, the U.S. Geological Survey/Water Resources Division, and the Department of Environmental Protection, Natural Resources Center, in Hartford, and the Connecticut Areawide Waste Treatment Management Planning Board, DeKoven Drive, Middletown.

Even though the printed documents are no longer available, copies (paper at $9.25, or microfiche at $3.50) may be purchased from:

U.S. Geological Survey
Open File Services Section
Branch of Distribution
Box 25425, Federal Center
Denver, Colorado 80225 ■

Trailside Botanizing

by G. Winston Carter



Black Oak
Quercus velutina

As a general rule, any tree that bears acorns is an oak. One exception to this is a genus of evergreen (Lithocarpus), one species of which is found in California and Oregon.

The Black Oak often grows beside the Red Oak. It also requires two years for its acorns to develop, each kernel being placed in a straight-sided cup of shingled scales. The half-grown acorns of the previous season appear back of the new shoots. Black Oaks, however, may go several years without bearing acorns.

The bark is usually very dark gray or brown with deep furrows and rough broken ridges. The inner bark contains a yellow strip containing tannin, which accounts for its sometimes being called "Yellow Oak." The flowers of the black oak consist of a fringe of yellow catkins (male) which grow at the end of each new shoot and a pair of red-tongued flowers (female).

One of the best characteristics distinguishing the black from the red oak is its wooly buds. Red oak buds are reddish and smaller in size. Black oak leaves are highly variable, but frequently widest toward the tip. The leaves are shiny, leathery and feel crisp, like a new one-dollar bill. In autumn these leaves turn brownish-yellow, unlike the deep red color of the red oak leaves.

Black oak bark has been used to furnish a yellow dye used in the printing of calicoes and in the tanning of leather. The wood is used in house building and in the manufacture of furniture.

DEP citizens' bulletin

State of Connecticut
Department of Environmental Protection
State Office Building
Hartford, Connecticut 06115

Commissioner: Stanley J. Pac
Director Info & Ed: William Delaney
Editor: Margot Callahan
Graphics: Rosemary Gutbrod
Composition: Linda Mrowka
Circulation: Helen Moriarty
Phone: 566-5524

"The Connecticut Department of Environmental Protection is an equal opportunity agency that provides services, facilities and employment opportunities without regard to race, color, religion, age, sex, physical handicap, national origin, ancestry, marital status or political beliefs."

SECOND CLASS POSTAGE PAID
AT HARTFORD, CONNECTICUT